DOCUMENT RESUME

ED 320 579 IR 053 176

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TITLE Costing Question Handling and ILL/Photocopying. A Study of Two State Contract Libraries in New Jersey. Executive Summary.
INSTITUTION New Jersey State Library, Trenton.
PUB DATE Jan 89
NOTE 14p.; For related documents, see IR 053 174-175.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Compensation (Remuneration); *Cost Estimates; Interlibrary Loans; *Library Expenditures; *Library Services; Library Surveys; *Models; Reference Services; Reprography; *Staff Utilization
IDENTIFIERS New Jersey

ABSTRACT

This summary reports the findings of a study conducted for the New Jersey State Library (NJSL) with two major objectives: (1) to determine how much it costs two State Contract Libraries (the Central Library of the Newark Public Library and the Bureau of Law and Reference of the New Jersey State Library) to provide supplemental question handling and interlibrary loan and photocopying services to libraries in New Jersey; and (2) to provide NJSL with recommendations regarding compensation strategies for the next 5 years. The summary defines concepts discussed in the study, summarizes the methodology used to develop a cost finding model, describes two survey instruments used to gather data on the use of staff time and characteristics of reference sources, summarizes results on marginal and average costs, and presents recommendations concerning compensation and investment strategies. (GL)

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COSTING QUESTION HANDLING AND ILL/PHOTOCOPYING

A Study of Two State Contract Libraries in New Jersey

Executive Summary

Prepared by
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For the New Jersey State Library

IR053176

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January 1989

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I. INTRODUCTION

This summary reports the findings of a study conducted by Barbara M. Robinson for the New Jersey State Library (NJSL).[1] It defines concepts discussed in the study; summarizes the methodology used to develop a cost finding model; describes two survey instruments used to gather data on use of staff time and characteristics of reference resources; summarizes results on marginal and average costs; and presents recommendations concerning compensation and investment strategies.

The objectives of the study are two-fold: to determine how much it costs two State Contract Libraries (SCLs) to provide supplemental question handling and interlibrary loan (ILL) and photocopying services to libraries in New Jersey; and to provide NJSL with recommendations regarding compensation strategies for the next five years. The detailed findings appear in the final report submitted to NJSL in January 1989. This study focuses on costs alone, and does not attempt to evaluate the quality or efficacy of the service provided by the two libraries.

Each of the two libraries perform many functions which are unrelated to the delivery of their state contract services. For accounting purposes, we defined subsets of the two parent libraries which we call NJL1 and NJL2. Costing the two services involves defining the services, collecting data on time spent on their delivery, and designing and implementing a cost finding model. The resulting cost information serves two functions. It enables NJSL to determine the extent to which the present level of state compensation covers the costs incurred by each of the two libraries. It also provides the two libraries with information about their respective internal costs. In both cases, the information is useful for planning and decision making.

Information on unit costs provides an objective basis for the State Librarian and each of the two libraries to discuss the level of supplemental service desired and the appropriate level of compensation. Economic analysis can provide a framework for discussion. Deciding how much, and what quality, supplementary service is needed, however, is a public policy issue.

II. DEFINING KEY CONCEPTS

The focus of the study is on determining the "marginal" and "average" unit costs to NJL1 and NJL2 of providing "supplemental" "question handling" and "ILL/photocopying" services. The term "supplemental" describes question handling and ILL/photocopying services provided by a designated SCL at the request of a New Jersey library. When a library cannot satisfy a client's request for question

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[1]A number of individuals participated in the study. A Working Group, which included staff from the two participating libraries and the NJSL, was formed to work with the study consultant. Sherman Robinson, a Professor at the University of California and an economist, was deeply involved in creating and implementing the cost finding model. The process of identifying and categorizing costs required intensive participation by financial and programmatic staff at the two libraries. Many thanks to all.

handling or ILL/photocopying services, it can turn to a designated SCL in an effort to serve its local or regular clientele better.[2] In effect, the SCL's staff and information resources "supplement" the locally available or "regular" resources of the requesting library by drawing on the resources of the SCL.[3]

NJSL contracts annually with designated SCLs to provide these supplemental services, which expand the range of resources available to the citizens of New Jersey, regardless of geographic location.[4] SCLs receive a negotiated lump sum in return for providing supplemental service. They do not receive a state subsidy for providing regular question handling and regular ILL/photocopying services to their regular clientele. The sum of regular and supplemental question handling is referred to as "overall" question handling.

"Question handling" is the major function of reference service. The term question handling is used, rather than question answering, because there are costs associated with handling a question whether or not it is answered. All other reference functions are categorized as "other reference" and include the following activities: developing specialized resources; education and training; and quality control.[5]

In order to identify the activities involved in question handling which required costing, we developed a model of question handling.[6] The question handling model generated an initial list of activities performed by staff in handling questions and providing "other reference services." The list of activities was expanded, refined, and incorporated into a survey instrument entitled Profile of Staff Time Spent During a Typical Week in 1987.

A second instrument, Characterizing Levels of Reference Resources, was also developed during the course of the study. It was completed by selected reference staff at NJL1 and NJL2 who positioned their respective collections on a continuum

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[2]For a list of services provided by the SCLs, see Library Development Bureau, New Jersey Library Network: Statewide Services Handbook, 1988 edition, (New Jersey State Library, Trenton, New Jersey, 1988).

[3]Regional Contract Libraries in New Jersey provide regional support through the six regional library cooperatives. The term "supplemental" as used here pertains specifically to services provided by State Contract Libraries.

[4]In 1987, SCLs serve any library in New Jersey requesting supplemental service. In 1988 the policy changed. SCLs were instructed to provide supplemental services only to libraries belonging to the New Jersey Library Network.

[5]These terms and concepts are described in Barbara M. Robinson, A Study of Reference Referral and Super Reference in California, (California State Library, Sacramento, June 1986).

[6]The question handling model and the terms used in the model were an outgrowth of the California study cited above. The model was refined considerably based on discussions with staff at NJL1, NJL2, and the National Gerontology Resource Center of the American Association of Retired Persons.

of reference resources in New Jersey and the region.[7] Respondents each identified a library which they perceived as having resources at the highest level in a given subject area. They then compared their own library's subject collection with this standard and listed at least one library which they perceived to be at the same level as their library, and one which they considered to be at a lower level. Some of the participants had difficulty making the comparisons. The exercise was instructive because it helped staff to recognize how unfamiliar they were with one another's reference resources.[8]

All staff at NJL1 and NJL2 whose jobs involve question handling, other reference, ILL, or photocopying, completed the Profile of Staff Time survey. Surveyed staff also estimated the percent of time they spent providing supplemental question handling, supplemental ILL, and supplemental photocopying. In order to account for all of their time during a typical work week, "surveyed staff" reported on time spent on non-reference activities, as well.

For the purpose of this study, ILL and photocopying functions were combined into "ILL/photocopying." Photocopying is one of two options for providing ILL service. Whether an item is loaned or photocopied, a library's ILL costs include both types of costs.

A number of cost concepts are used in the study. They are "marginal" and "average" costs; "variable" and "fixed" costs; "direct" and "indirect" costs; and "operating" and "capital" costs. The "marginal" unit cost of a given service or program is the incremental cost of providing one more unit of service. Marginal costs include only "variable" costs, which are defined as those costs which vary with the amount of service provided. For example, in providing reference and ILL/photocopying services, the major variable cost is the cost of staff time.

In contrast, the "average" unit cost of a given program is calculated by dividing total dollar costs by the total volume of service provided. Average unit cost includes "fixed" costs as well as variable costs. Fixed costs include costs such as rent, utilities, and depreciation that are independent of the amount of service provided in a given year.

In the cost finding model, a distinction is made between "direct" and "indirect" costs. "Direct" costs are those labor and material costs which can be directly assigned to a program or service, whether fixed or variable. In contrast, in-

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[7]Reference resources are defined in the study as the combination of staff resources and information resources, which include all types of resources found in the library as well as accessible to staff in the library via telephone and telecommunications.

[8]There are tools, developed by the Research Libraries Group and the Resources and Technical Services Division of the American Library Association, which assist staff to assess their collections in an objective manner. This exercise was intended to be impressionistic and explicitly comparative. It helped staff to recognize how incomplete their knowledge was of one another's reference resources.

direct costs are those costs which cannot be easily identified in the product or service. "Indirect" costs include insurance, taxes, rent, utilities, and staff whose time is devoted in whole, or in part, either to running the library or to maintaining the building.

Finally, we distinguish "operating" costs from "capital" costs. Operating costs are the organization's recurring annual expenditures. Capital costs are one-time expenditures for capital goods such as new construction, major renovations, and purchased equipment. State compensation for the provision of question handling and ILL/photocopying services is intended to reflect annual operating costs, not one-time capital investments. Therefore capital expenditures are not included in the marginal and average unit cost calculations.

Capital goods, such as buildings and equipment, however, do provide an annual flow of services which usually appear in an organization's operating budget as either depreciation or amortization. A library's collection also represents a capital good. The annual flow of services resulting from the use of the collection is an important cost consideration. Costing the capital services related to the collection, however, present a special challenge.

The standard accounting approaches used to cost the annual flow of services associated with a capital good are either to estimate a depreciation charge or to impute a market rental price. These traditional accounting methods are really inappropriate when applied to costing the annual flow of services provided by a library collection. A library collection is not comparable to a machine or building that wears out. There is no rental market for library collections and it is very difficult to value a collection for the purpose of computing a depreciation charge. Consequently, we developed a new approach to costing library collection services. We define a special "Collection Maintenance" cost center which brings together all costs associated with the delivery of services by the library collection to the other cost centers in the library. The methodology is described below.

III. DEVELOPING A COST FINDING MODEL

The cost finding model, developed during the course of the study, identifies all annual operating costs which are directly and indirectly associated with the delivery of question handling and ILL/photocopying services by NJL1 and NJL2. To identify the costs of these services, the line item budgets of each of the parent libraries are converted into a program budget with seven cost centers. They are: Question Handling; Other Reference; ILL/Photocopying; Collection Maintenance; Circulation/In-House Use; Other Programs; and Public Space.

We then created subset program budgets for NJL1 and NJL2 which include the first five cost centers, but exclude Other Programs and Public Space. These last two cost centers deliver services, but are excluded because they do not support question handling or ILL/photocopying by NJL1 and NJL2. The activities identified in the question handling model and the Profile of Staff Time define the activities of the Question Handling, Other Reference, and ILL/Photocopying cost

centers.[9] The Collection Maintenance cost center is described below. The Circulation/In-House Use cost center encompasses both the loan of library materials to clients to check out, as well as the in-house use of the collection by the public.

Even though neither library pays rent, the space is part of the cost of the operation. To measure the annual costs of housing each library, we imputed a market rent for the physical square footage each occupies.[10] Data on depreciation charges for equipment bought both in 1987 and in previous years were not available. Given the amount of equipment relative to other categories of costs, the absence of these data is not likely to affect the average unit costs significantly.[11]

As stated above, we have taken a new accounting approach in order to cost the annual flow of services provided by the two library collections. We created the "Collection Maintenance" cost center whose sole function is the care and feeding of the collection. This cost center brings together the following activities and associated costs, which are usually widely scattered throughout a library's line item budget: ordering; acquisitions (including on-line searching of commercial data bases); processing; cataloging (including using OCLC); first-time shelving; binding; deselecting, deaccessioning, and weeding; preserving; repairing; shelf reading; and storage on-site and off-site. The total annual budget of this cost center measures the costs of maintaining a flow of "collection services" to other cost centers in the library.[12] All of these activities serve to maintain the collection and enable patrons and staff to use it.

Table 1 shows the shares of the five cost centers in the total operating budgets of NJL1 and NJL2. Figure 1 shows the line-item composition of the cost center budgets for each of the two libraries, which are labelled "QH" (Question Handling); "Oth ref" (Other reference); "ILL" (ILL/Photocopying); "Clct" (Collection Maintenance); and "Circ" (Circulation/In-House Use). The Collection Maintenance cost center represents roughly two thirds of each library's operating budget.

The services provided by Collection Maintenance and Other Reference are intermediate inputs used by the other cost centers. Consequently, these intermediate costs represent a portion of the cost of providing question handling, ILL/photocopying, and circulation/in-house use. These costs are allocated to the other cost centers. The allocation procedure is described below.

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[9]When the total costs of Reference are reported, the costs of Question Handling and Other Reference have been combined.

[10]We made direct estimates of space used by each cost center and applied commercial rental rates.

[11]For example, at the time of the study, neither library had purchased an automated circulation system.

[12]Note that our approach assumes that the collection is neither growing nor shrinking significantly during the period of analysis. Investment in expanding the collection would have to be treated differently.

Table 1: Composition of Program Budgets (Percent Shares)

Cost Center	NJL1	NJL2
Question Handling	10.7	13.0
Other Reference	10.0	15.0
ILL/Photocopying	3.9	9.0
Collection Maintenance	67.5	60.5
Circulation/In-House Use	7.9	2.5
Total	100.0%	100.0%

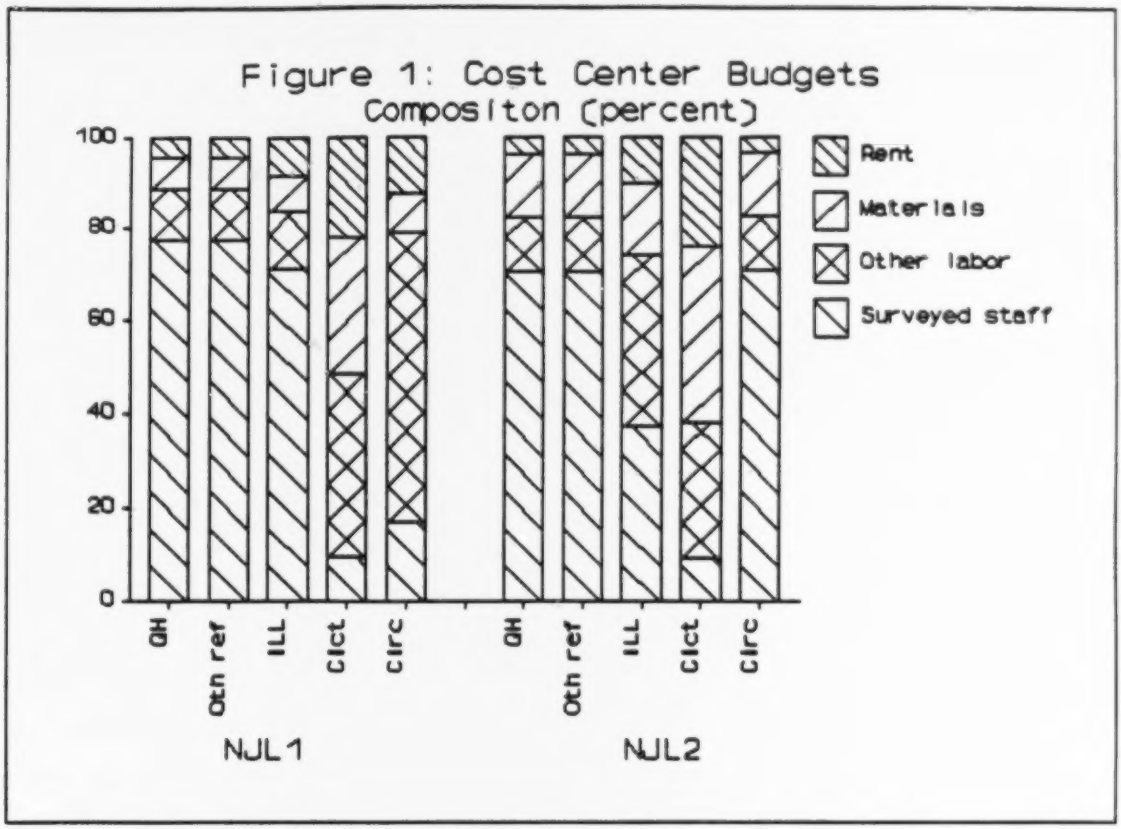
The line-item costs allocated to each cost center are: "surveyed staff," "other labor," "materials and services," and "imputed rent." "Surveyed staff" costs represent the loaded salaries of those staff who were interviewed during the study. "Other labor" costs include loaded salaries of all other staff who were not interviewed. "Materials and services" brings together the costs of tangible materials and supplies, including acquisitions and the costs of purchased services, such as legal, insurance, data processing, utilities, and maintenance services. "Imputed rent" represents the cost of housing the library.

Using the data collected through the Survey of Staff Time on direct staff time spent delivering question handling, other reference, and non-reference services, including ILL and photocopying, we allocated each respondent's loaded labor costs to the appropriate cost center. The labor costs of non-surveyed staff, which represented a small percentage of total labor costs, were also directly allocated to each cost center according to the cost shares of surveyed staff.

"Total labor cost" is the sum of surveyed labor and other labor. It represents the largest share of the cost of Reference service, which is the combined costs of Question Handling and Other Reference: 89% for NJL1 and 83% for NJL2. Total labor is also the greatest share of the cost of ILL/Photocopying and Circulation/In-House Use at both libraries. Total labor costs compose 84% of NJL1 and 74% of NJL2's ILL/Photocopying costs, and 79% of NJL1 and 83% of NJL2's Circulation/In-House Use costs. The total labor cost for Collection Maintenance is 49% of the total cost at NJL1 and only 38% at NJL2. On the other hand, the combined cost of materials and imputed rent is a significant part of the total cost of Collection Maintenance at both libraries (51% at NJL1 and 62% at NJL2).

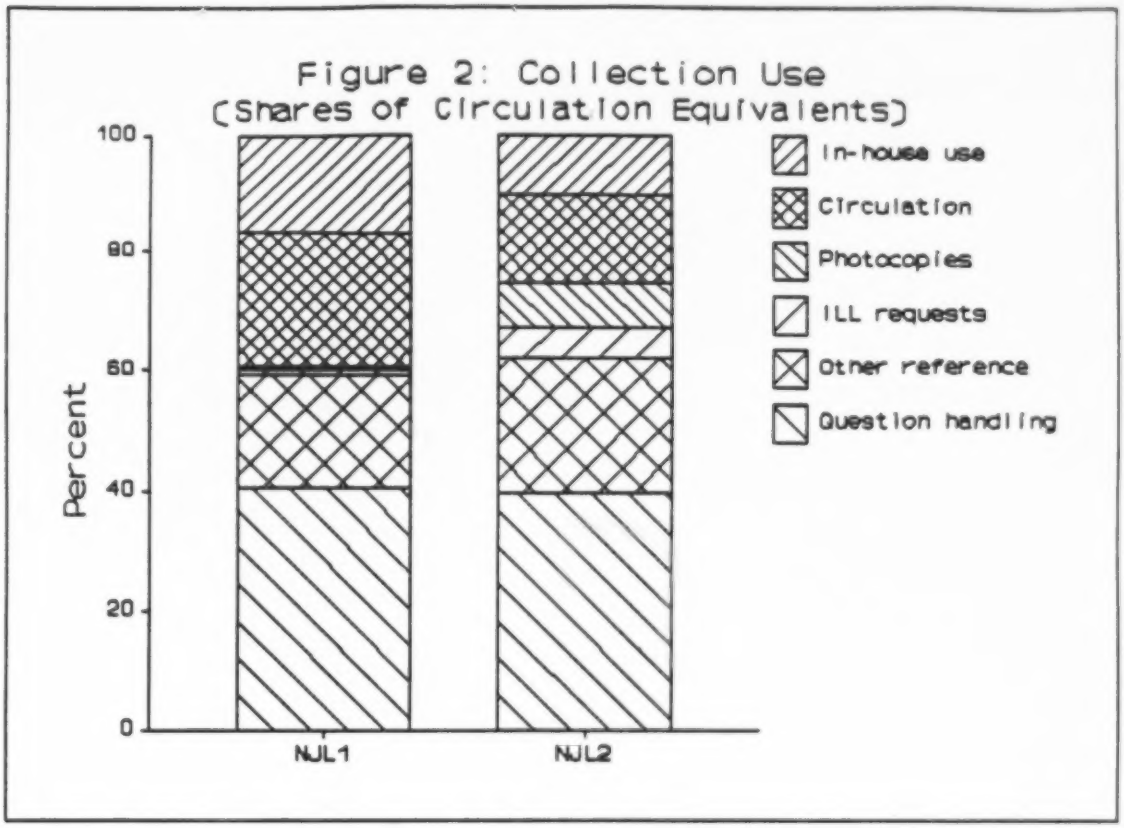
Once we established the total budget of each cost center, we allocated the costs of Other Reference and Collection Maintenance to the other cost centers. The procedure involves mapping figures which appear in the Other Reference and Collection Maintenance columns into rows to create two additional line-item cost categories. The cost of Other Reference is allocated largely to Question Handling because its principle function is to support handling questions.[13] The cost of Collection Maintenance is allocated according to the amount the other cost centers use the library collection. Figure 2 indicates, in terms of shares, how much each cost center uses the library collection. To calculate these shares, we defined a standard measure of collection use as a "circulation

[13]The decision regarding how to allocate Other Reference costs was based on the professional judgment of staff at each library.



equivalent." We then estimated how many circulation equivalents each cost center used in performing its function. Direct use by patrons (circulation plus in-house use) represents 39% of total use in NJL1 and 25% in NJL2. Contrary to what one might expect, the largest users of the collection are the reference staff. Question Handling and Other Reference together account for 59% of the total use of the collection in NJL1 and 62% in NJL2. NJL1 uses the collection less than NJL2 for ILL/photocopying (2% compared to 13%).

The cost structure of the final program budgets for Question Handling, ILL/Photocopying, and Circulation/In-House Use appear in Figure 3. In this figure, surveyed and other labor costs have been combined into a single category, "direct labor." "Collection" refers to collection maintenance costs.



The share of direct labor costs in Question Handling is the same in each of the two libraries (17%).[14] The labor share is also the same (20%) for the total of their fully allocated budgets. This similarity in labor shares is striking, particularly given the many institutional differences between the two libraries. For the other categories, there are major differences in cost structure. ILL/Photocopying uses relatively more direct labor in NJL1 (66% versus 41% in NJL2), and less Collection Maintenance services (21% versus 44%). For Circulation/In-House Use, the direct labor share is higher in NJL1 (17% versus 11%), identical for Collection Maintenance (71%), and lower for Other Reference (7% versus 16%).

IV. UNIT COSTS

Combining the fully allocated program budget with output data for regular and supplemental question handling, and for ILL/photocopying, we computed unit costs for these services. The results are summarized in Figure 4. "QH" refers to overall question handling, "Sup QH" refers to supplemental question handling, and "ILL" refers to ILL/photocopying.

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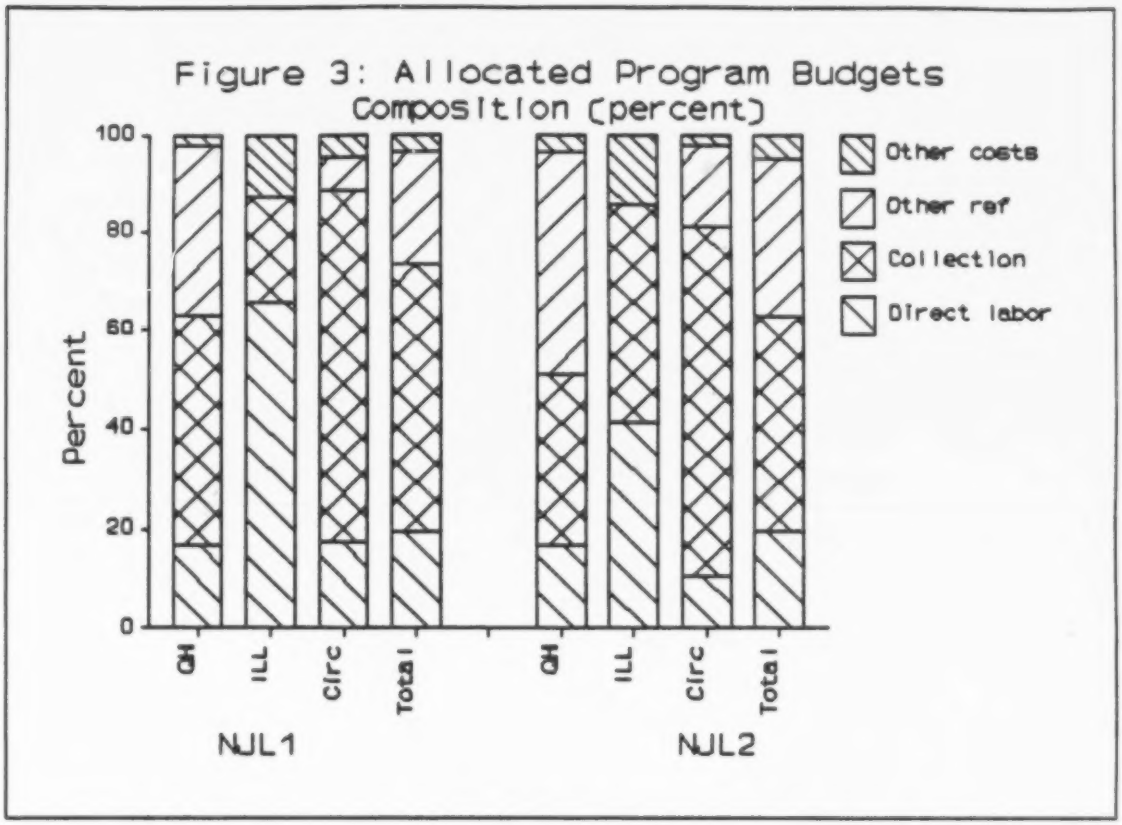
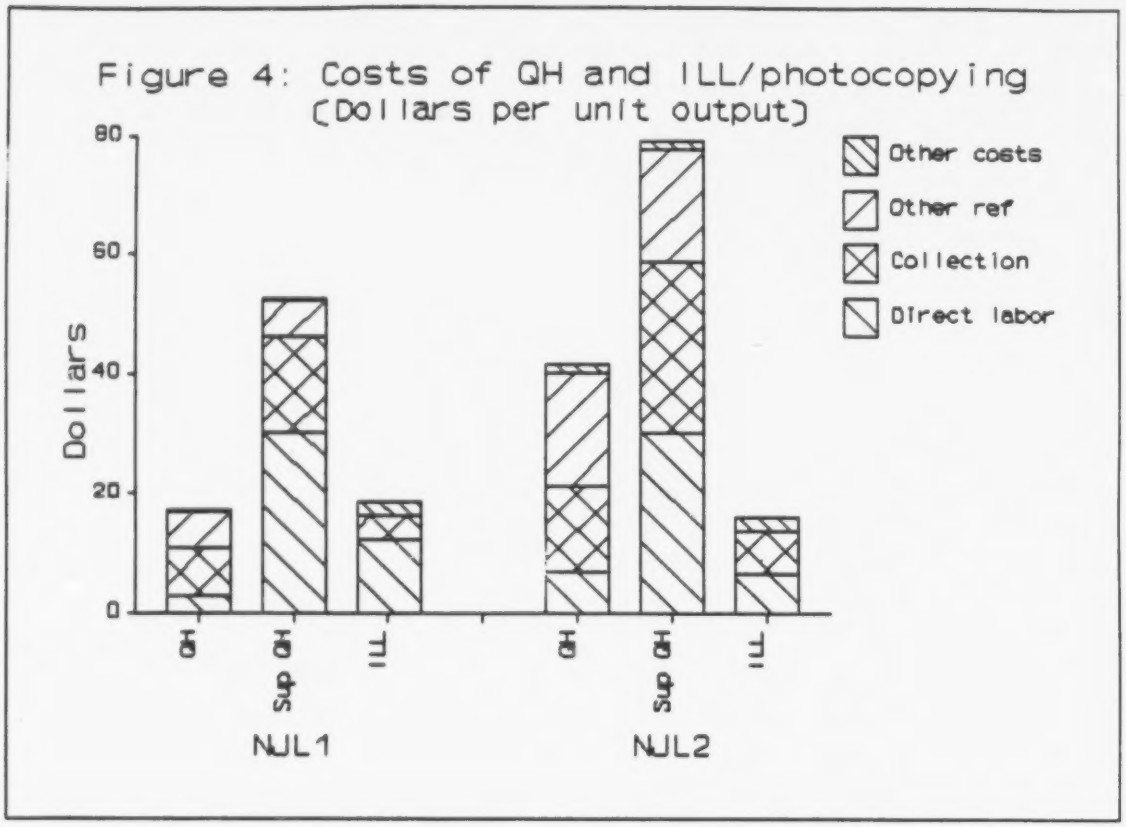
[14]Since Other Reference and Collection Maintenance include labor inputs, as shown in Figure 1, they incorporate indirect labor costs in Figure 3.



For overall question handling, both the total cost per question handled and the structure of those costs differ significantly between the two libraries. This result is hardly surprising given that the two libraries differ greatly in their clienteles and the nature of the services they provide. It is impossible to compare these costs without detailed study of the services provided --study which is beyond the scope of this project.

By contrast, Figure 4 indicates similarities between the two libraries in the costs of supplemental question handling. Our measure of marginal cost includes only the fully loaded labor cost per supplemental question handled, which is nearly identical for the two libraries: $30.13 at NJL1 and $30.08 for NJL2.[15] The major reason is that the staff time spent per supplemental question handled is virtually the same in the two libraries. While they differ greatly in their regular question handling, the two libraries allocate similar staff resources

[15]Marginal costs might also include the costs of materials and services, if they varied with the level of service. These costs, however, were very small and were not included. A variable cost such as for online searching of commercial data bases might be significant in other libraries, and so should be included in their marginal cost calculations.



in dealing with supplemental questions in their roles as State Contract Libraries.

Adding non-labor costs to total labor yields the average unit cost of supplemental question handling: $52.47 for NJL1 and $79.14 for NJL2. The average total cost is considerably larger than the marginal cost. The two largest non-labor costs are collection maintenance and other reference.[16] The direct costs of imputed rent and materials and services are quite small, and are combined into "Other costs." The structure of their non-labor costs account for all the differences between the two libraries in the total costs of supplemental question handling.

Figure 4 also gives the marginal and average unit costs of handling ILL/photocopying requests. The labor or marginal costs are: $12.29 at NJL1 and $6.72 at NJL2. The total average cost per ILL/photocopy request is: $18.70 at NJL1 and $16.21 at NJL2. Per request, there are higher collection maintenance costs at

[16]We call these two cost categories "non-labor" costs to distinguish them from direct labor costs. Note, however, that they indirectly include labor costs since labor costs are included in the budgets of the Other Reference and Collection Maintenance cost centers.

NJL2. The effect is to make the average costs of ILL/photocopy services at the two libraries closer than their marginal costs.

V. RECOMMENDATIONS

Given the results of the cost finding model, we make a number of recommendations concerning compensation and investment strategies. Related issues concerning data collection and organizational responsibilities are also discussed.

The primary policy question is: How much of the cost of the supplemental services should NJSL bear? For the short term, we recommend that NJSL should compensate each library for at least the marginal cost of supplemental question handling and ILL/photocopying. Currently, marginal costs include only labor costs. However, if variable costs of materials and services (e.g., online searching) become significant in the future, they should also then be included in the marginal cost calculation.

Over the next five years, we recommend that NJSL compensate each of the two libraries not only for the marginal costs of supplemental question handling and ILL/photocopying, but also for some or all of the average unit costs of providing these services.[17] The marginal and average costs provide lower and upper bounds on the appropriate level of state compensation, defining a range of possibilities. Determining the appropriate compensation level within these bounds is a policy issue that must be negotiated by the NJSL and the two libraries.

Any compensation formula should be based on an average total number of supplemental questions and ILL/photocopies handled over a period of years, not on data for a single year. The approach to data collection will need to be streamlined so that there is a workable balance between the need for reliable data and the costs to the library of collecting data.[18]

The compensation formula will need to be adjusted periodically to reflect substantive changes in cost components, such as wage and price increases. Each library should be informed of the amount of compensation it will receive from the State well in advance of its annual budget cycle.

In addition to providing compensation for annual operating costs related to supplemental services, we recommend that the NJSL make capital grants to the two libraries for collection development in specified subject areas. In addition

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[17]As we described earlier, the average unit costs for providing supplemental question handling and ILL/photocopying service at each library is composed of five distinct costs which we calculated through the cost finding model: the labor costs, which we describe as the marginal cost; materials and services; imputed rent; other reference costs; and collection maintenance costs.

[18]There are three kinds of costs associated with data collection: the cost of staff time spent collecting and distilling the data; the cost of the interruption in the question handling or ILL/photocopying work flow; and the chilling effect on the client.

to providing targeted acquisitions funds, we also recommend that the State invest in staff development (e.g., training staff at each of the two libraries to use the newly acquired materials).

If the NJSL makes capital grants for collection development and staff training, it should require that each recipient State Contract Library develop a strategic plan to justify collection development in specified subject areas. The plan should justify targeted collection development in the particular library, comparing its resources to those of other libraries. It should also consider opportunities for cooperative collection development.

The NJSL should fund a study to determine the characteristics of "regular" and "supplemental" questions and ILL/photocopying requests handled by the two libraries. The study should focus on differences in resources required for handling the different types of questions and ILL/photocopy requests.

The NJSL should fund a study on the use of the collections in the two libraries. The study should focus on in-house use of the collection by patrons and reference staff. In examining staff use, the study should distinguish between question handling and other reference functions.